June 22, 2016

Kristine Koch
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Suite 900, M/S ECL-115
Seattle, WA 98101-3140

Re: Request for Dispute Resolution on EPA June 2016 Feasibility Study
Portland Harbor Feasibility Study (Lower Willamette River, Portland Harbor Superfund Site, USEPA Docket No: CERCLA-10-2001-0240)

Dear Kristine:

Pursuant to Section XVIII of the 2001 Administrative Settlement Agreement and Order on Consent for Remedial Investigation/Feasibility Study (Consent Order), Arkema Inc., Chevron U.S.A. Inc., Evraz Inc. NA, Gunderson LLC, NW Natural, TOC Holdings Co. and Union Pacific Railroad Company (collectively, the "Disputing Respondents") all of whom are members of the Lower Willamette Group ("LWG") and signatories to the Consent Order, hereby initiate dispute resolution concerning EPA's June 2016 Feasibility Study Report (FS).

The Disputing Respondents neither intend nor expect that exercise of their right to dispute resolution will delay EPA issuance of the Portland Harbor Record of Decision. EPA previously issued its August 2015 Draft FS after notifying the LWG that, rather than continuing to work with the LWG to revise the LWG's 2012 draft FS, EPA would take over the work and issue its own FS. The June 2016 FS contains substantial changes from EPA's August 2015 FS, many of which are the subject of this dispute. Consistent with our February 4, 2016 agreement with EPA, we understand that the dispute process will be streamlined by proceeding directly to the formal determination phase, and the Environmental Cleanup Office Director's decision is anticipated to be made simultaneously with the agency's remedy decision after considering all public comments along with the disputed issues.

The Disputing Respondents' objections to this FS are not intended to indicate any unwillingness to clean up sediments that pose an unacceptable risk to human health or the environment, but the Disputing Respondents do object to an FS that is not grounded on facts and not based on accepted scientific principles.

Given that this FS was issued on June 8, 2016, there has been limited time for review. However, it is apparent that EPA has evaluated the protectiveness of the FS alternatives by methods that are inconsistent with the approved baseline risk assessments and failed to incorporate appropriate risk management principles into its development, screening, or evaluation of alternatives. Although the FS differs substantially from EPA's August 2015 Draft FS, it continues to lack complete and transparent evaluation of the long- and short-term effectiveness of the alternatives, as well as of the degree to which implementation of those alternatives will reduce the toxicity, mobility or volume of hazardous substances, including through treatment of material it has labeled principal threat waste (PTW). The cost projections in the FS are not supported and appear to be significantly inaccurate. The FS also fails to articulate a clear, accurate and understandable framework and schedule for implementation by which each alternative can be compared. For these reasons, the FS fails to provide an adequate foundation for EPA to reasonably conclude that certain FS alternatives are not protective or fail to comply with applicable or

relevant and appropriate requirements (ARARs), or that any one of the alternatives is, on balance, more effective, implementable or cost effective than any other alternative.

Request for Dispute Resolution

The Disputing Respondents respectfully object to EPA's modifications to the LWG 2012 draft Feasibility Study as incorporated in the June 2016 FS, and request formal dispute resolution on the following bases:

1. EPA's conclusion that alternatives B and D are not protective or fail to comply with ARARs is based upon methods that are inconsistent with the remedial investigation and baseline risk assessments. EPA guidance requires that areas for cleanup be defined based upon the baseline risk assessments.[1] The LWG's 2012 draft FS evaluated a range of protective alternatives to address identified risks at appropriate exposure scales. EPA's August 2015 Draft FS found all of EPA's alternatives to be protective and comply with ARARs. EPA's failure in the June 2016 FS to evaluate protectiveness in a manner consistent with the approved risk assessments and with sound risk management principles results in large areas being designated for active sediment cleanup where risks are either not present or cannot be meaningfully reduced through a sediment cleanup. EPA should focus on managing the most significant and pervasive risks at the site based on transparent application of its own approved and final risk assessments.

2. EPA's June 2016 FS continues to lack complete and transparent evaluation of the long- and short-term effectiveness and cost-effectiveness of its alternatives, as well as of the degree to which those alternatives reduce the toxicity, mobility or volume of hazardous substances through treatment, including treatment of PTW. As with the August 2015 Draft, the FS still lacks information necessary to quantify long-term, short-term, and cost effectiveness. As a result, it is not possible to sufficiently understand the link between costs of the remedial actions and the likely public health and environmental benefits to be achieved. The FS does not include an evaluation of how long it will take alternatives to achieve cleanup levels after dredging and capping is completed. EPA's estimated costs for performing each of the alternatives continue to omit significant cost elements (including EPA's anticipated "initial conditions" sampling, pre-remedial engineering design investigations, Oregon Department of State Lands access, lease and easement fees, and agency oversight and participation costs (which alone have amounted to more than 27% of RI/FS costs to date)) and dramatically understate other cost elements on the basis of unrealistic and in some cases impossible assumptions about dredge production rates and volumes, remediation waste processing, engineering design, construction management, best management practices EPA intends to require, and the present value of money (including the cost of financial assurance). In the absence of a reasonable basis to compare the time frames in which the cleanup goals will be attained, the trade-offs between short-term and long-term impacts, costs, and the benefits of the cleanup cannot be

[1] EPA guidance states:

> "As a general policy and in order to operate a unified Superfund program, EPA generally uses the results of the baseline risk assessment to establish the basis for taking a remedial action using either Section 104 or 106 authority. *** If the baseline risk assessment and the comparison of exposure concentrations to chemical-specific standards indicates that there is no unacceptable risk to human health or the environment and that no remedial action is warranted, then the CERCLA Section 121 cleanup standards for selection of a Superfund remedy, including the requirement to meet applicable or relevant and appropriate requirements (ARARs), are not triggered."

In other words, where the baseline risk assessment concludes that a human or ecological receptor will not be exposed to potentially unacceptable risk by a contaminant present in a given media, there is no basis for taking remedial action. Where no remedial action is warranted, development or refinement of preliminary or final remediation goals is unnecessary. *Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions*, p.3 (OSWER Directive 9355.0-30, April 22, 1991)

made as required under the National Contingency Plan (NCP).[2] In other words, the conclusions in the FS are not based on fact or sound science. A proper analysis of alternatives would not result in the selection of Alternative I based either on near-term or long-term effectiveness. The active remediation required in Alternative I cannot be justified as a cost-effective reduction of risk in comparison to other alternatives. EPA must provide a clear, realistic, fact-based and scientifically sound evaluation of the risk reduction that can be achieved through sediment cleanup and the likely actual cost and time frame for each alternative to attain that level of risk reduction.

3. The FS fails to articulate a clear and understandable framework and schedule for implementation by which each alternative can be compared. For example, the FS states that "all the alternatives assume the remedy will be implemented as described. That is, there would be no changes identified during remedial design. However, due to the uncertainty inherent at Superfund sites, there will be adjustments made throughout the design and construction process."[3] Nothing in the FS describes what adjustments are possible or how those adjustments would be determined, and, in contradiction to this assertion, EPA's prescriptive technology assignments are carried through to the Proposed Plan. Similarly, the timeframes for all alternatives are described to include a "Year 0" "initial conditions" assessment expected to take 3 to 5 years to complete, and a subsequent set of "Year 0" start-up activities, including "pre-design investigations."[4] No time is allowed in the schedule for preparation and approval of actual remedial engineering design. "Year 0" is also identified as "the first year of construction."[5] Therefore, "Year 0" for all alternatives appears to mean more than 3 actual calendar years, but it is impossible to tell from the FS how many actual calendar years are rolled up into "Year 0" for any given alternative. EPA should provide a realistic vision and timeframe for implementation of its alternatives, and EPA should clearly identify in its alternatives development and decision trees that sediment management areas and technology assignments and process options will be refined and adjusted through remedial design and implementation.

Discussion

EPA's June 2016 FS must provide the foundation for EPA's Proposed Plan to clean up Portland Harbor. The FS must therefore include information showing that the choices and decisions EPA has made in the Proposed Plan are based in reason and science, and EPA must articulate a rational connection between the facts found and the choices it has made.[6] EPA must consider all important aspects of the problem and explain decisions that run counter to evidence before it.[7] And EPA must not rush through the process, or make a "sudden, knee-jerk decision."[8]

For the reasons described below, the Disputing Respondents believe that EPA's June 2016 FS does not contain the information necessary for EPA to demonstrate that the remedy it has proposed for Portland Harbor is based in reason and science or to make a rational connection between facts found, including the results of the EPA-approved remedial investigation and risk assessments, and EPA's preferred alternative. EPA's alternatives analysis fails to consider important aspects of EPA remedy

[2] 40 C.F.R. §430(f)(1)(ii)(E).
[3] EPA June 2016 FS page 3-39.
[4] See, e.g., page 3-41 and note 12.
[5] See page 3-41 note 14.
[6] *United States v. NCR Corp*., 911 F. Supp. 2d 767, 773 (E.D. Wis. 2012) *aff'd sub nom*. United States v. P.H. Glatfelter Co., 768 F.3d 662 (7th Cir. 2014); *United States v. Newmont USA Ltd.*, 504 F. Supp. 2d 1077, 1082 (E.D. Wash. 2007).
[7] *Motor Vehicle Mfrs. Ass'n of the U.S., Inc. v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43, 103 S. Ct. 2856, 2867 (1983).
[8] *United States v. NCR Corp*., 911 F. Supp. 2d at 773.

selection criteria and fails to explain decisions that deviate significantly from the RI and risk assessments. Further, significant and unexplained changes in technical approach between EPA's August 2015 FS and the June 2016 FS, together with the simultaneous release of the FS and Proposed Plan, suggest that EPA has rushed through the process to create an FS that supports a decision EPA has already made.

1. EPA's conclusions that certain alternatives are not protective or fail to comply with ARARs are based upon evaluations that are inconsistent with the approved remedial investigation and baseline risk assessments and fail to apply appropriate risk management principles.

EPA has not explained why Alternatives B and D are not protective of the environment. EPA believes that all alternatives (except the "no action" alternative) are protective of human health. However, contrary to its August 2015 FS, EPA has now identified Alternatives B and D as not or possibly not protective of the environment.[9] As best we can tell, EPA has changed its conclusion about Alternatives B and D based largely on its revised approach to benthic risk.[10]

EPA made extensive changes to the benthic approach for this FS, but those changes are still inconsistent with the comprehensive benthic risk approach contained in the approved Baseline Ecological Risk Assessment (BERA). The FS states: "The protection of benthic species to *[sic]* contaminated sediment is evaluated using the benthic risk area defined by an order of magnitude greater than the RAO 5 PRGs. The post-construction interim target for RAO 5 was established at 50 percent reduction in the area posing unacceptable benthic risk."[11] So, instead of using the Comprehensive Benthic Risk Area (CBRA) approach previously developed collaboratively with EPA and the LWG using multiple lines of evidence, EPA now maps benthic PRG exceedance factors on a point-by-point basis and uses a 10 times exceedance factor to identify areas of concern. EPA then concludes that if 50% of this area is actively remediated, the alternative is "protective" on an interim basis. It is completely unclear how this new method is: 1) in any way more accurate or consistent with the BERA; and 2) more predictive of benthic risk or the effectiveness of the alternatives, as compared to simply using the previously developed CBRA, which are entirely consistent with the BERA.[12]

EPA's conclusion that Alternatives B and D are not protective of the environment may also relate, at least in part, to EPA's decision to evaluate the performance of its alternatives based upon recalculated surface weighted average concentrations (SWACs) rather than those used in its August 2015 FS (used by EPA to estimate post-construction risks, detailed in EPA's Appendix J). The selection of a preferred alternative at a sediment CERCLA site is very sensitive to and dependent (i.e. "sensitively

[9] In part, EPA bases its determination that Alternative B and D may not be protective of ecological risk on the fact that institutional controls do not effectively prevent exposure by ecological receptors. However, all alternatives rely to some extent on institutional controls, and this was also the case with all alternatives in the August 2015 FS.
[10] The LWG has previously commented that EPA should use the Comprehensive Benthic Risk Areas (CBRA) approach previously developed based upon the approved BERA to evaluate benthic risks consistent, and the NRRB commented that EPA should revisit the benthic approach for the final FS. *National Remedy Review Board and Contaminated Sediments Technical Advisory Group Recommendations for the Portland Harbor Superfund Site* (EPA, December 31, 2015), p. 4.
[11] EPA June 2016 FS, p. 4-8.
[12] Further, benthic risk models do not honor the measured data. Although the LRM and FPM are model predictions using data from the toxicity tests conducted with site sediments, some of measured data is not honored. Any modeled risk for benthic invertebrates that ignores actual toxicity testing results needs to be assessed in weight-of-evidence and river-mile specific decision-making. The benthic risk footprints should not extend into areas shown to have a lack of toxicity based on actual laboratory toxicity tests. Though EPA states measured toxicity data were reviewed to evaluate correlation with model predictions (EPA June 2016 FS Appendix D, p D-31), the resulting areas are not consistent with the BERA.

dependent") on the SWAC value of site; however, nothing in the June 2016 FS explains why EPA has changed its methodology for calculating SWACs between the August 2015 FS and the June 2016 FS, why EPA believes its current methodologies are superior to its prior methodologies, or even precisely what its current methodologies are.

The June 2016 FS appears to use these new SWACs to estimate pre- and post-construction risks for the alternatives. EPA presents an uncertainty analysis in Appendix I that evaluates different methods for estimating SWACs for pre-construction sediment surfaces. Using PCBs as an example, EPA presents SWAC estimates using four different methodologies that range between 79 and 205 micrograms per kilogram (µg/kg). (The natural neighbor method used for Remedial Action Level (RAL) curves in Section 3 estimates a site-wide SWAC of 92 µg/kg, which does not match any of the values in Appendix I). It is not clearly explained in the main text, but based on tables presented in Appendix J (see Table J2.3-1a), it appears that EPA uses a high-end site-wide SWAC estimate (208 µg/kg, which is close to 205 µg/kg but not the same) to represent current site conditions for RAO 2 (i.e., pre-construction risks; identified as post-construction risks for Alternative A). This results in EPA presenting pre-construction risks that are completely inconsistent with risks identified in the approved BLRAs[13]. The risks estimated for Alternative A (no action) should be the same as baseline risks. EPA also assumes that post-constructed surfaces are "zero" (see ES-14). The net effect of these assumptions is that EPA poses technically unrealistic risk reduction estimates for all the alternatives. At the same time, EPA has not explained its use of the highest available estimate for pre-remediation SWACs and associated risks, which estimates are inconsistent with the BLRAs.

EPA's June 2016 FS improperly aggregates sediment data from 1997 through 2011 for the surface sediment characterization and is therefore significantly inaccurate. If EPA assumes a higher pre-remediation SWAC value that is inconsistent with the risk assessments and based on outdated data, then more aggressive clean up alternatives may plot closer to the inflection (i.e. "knee") of the utility curve. That inappropriate portrayal could lead a decision maker to select a remedy that requires more active remediation than is required to achieve cleanup goals. EPA's use of a SWAC that is inconsistent with the risk assessments exaggerates the benefits of the larger alternatives and artificially drives remedy selection toward larger alternatives (e.g. E, F and I). If the SWAC value is set consistent with the approved risk assessments, the utility curve actually supports remedy selection toward Alternatives B, C and D.

The FS fails to explain how the alternatives it has developed contribute to meaningful risk reduction in specific areas of the site. Protectiveness is a threshold criterion under CERCLA, but "protectiveness" does not support an EPA requirement for remedial action in the absence of identified unacceptable risk or failure to comply with an ARAR.[14] The LWG has previously commented that EPA's August 2015 FS failed to follow the BLRAs or provide a clear description of risk management decisions,

[13] The site-wide fish consumption risks estimated in the BHHRA (summarized in Section 1.2.5.1) are higher than those presented for Alternative A in Table J2.3-1a. However, the risks for Alternative A appear to be based on some estimate of an arithmetic mean concentrations whereas the BHHRA risks are based on 95% UCL or maximum concentrations. The average PCB concentration in the BHHRA based on actual tissue data was 160 ug/kg in bass and 2,500 ug/kg in carp, which includes a single outlier sample of 19,000 ug/kg (the average without the outlier is 353 ug/kg). The modeled tissue concentrations used for Alternative A are 352 ug/kg for bass and 820 ug/kg for carp, which are approximately 2 times higher than the measured tissue concentrations (excluding the single carp outlier). The river mile risks for Alternative A cannot be compared directly with the BHHRA because the risks for Alternative A are calculated based on one-third transects of a rolling river mile (both sides of the river and navigation channel) whereas the BHHRA risks were for an entire (bank-to-bank river mile). However, the risks for Alternative A are generally higher than those in the BHHRA (potentially due to spatial scale issues). In the BHHRA, risks at RM 11 were 1 x 10-3 and all other risks were less than 1 x 10-3. For Alternative A, EPA's FS indicates there are several segments with risks of 1 x 10-3 or higher.

[14] See note 1, *supra*.

resulting in an FS that was inconsistent with the BLRAs in many respects. Many of those comments remain relevant to the June 2016 FS and, in general, we will not repeat them here.[15] However, several aspects of the June 2016 FS contain new or revised evaluations from the August 2015 draft that not only diverge without explanation from the approved risk assessments but lack any demonstration of their superiority to the analyses of the same and similar issues in EPA's August 2015 FS.[16]

The fact that EPA finds the B and D RALs themselves (as well as a new "PTW" RAL) protective in certain areas of the site demonstrates that, as the LWG has previously commented,[17] EPA's approach does not narrowly tailor required cleanup activities to actual site risks identified through the risk assessments. EPA has selected some cleanup criteria that may be applicable to certain locations (or facies) and applied them inappropriately in others. For example, the use of TPAH RALs within the navigation channel is technically inappropriate because the BLRAs did not identify potentially unacceptable risk from this class of chemicals (beyond the extent to which benthic risk identified in the BERA may correlate with PAHs) except in nearshore areas where direct contact or shellfish harvesting might potentially occur. EPA's application of E RALs in some but not all parts of SDU 3.5E results in the identification of a Sediment Management Area for PeCDD where the current SDU 3.5 SWAC already meets the most conservative PeCDD PRG of 0.0002 ppb for RAO2 (fish consumption on a river mile basis).[18] In addition, the differential application of PAH RALs results in unjustified differential post-construction risk. A larger remedial footprint results from the Alternative I using a 35,000 ug/kg TPAH RAL near outfall OF53A in SDU2E, whereas PAH-driven remedial actions in some other parts of the river have smaller footprints using a TPAH RAL of 69,000 ug/kg. The rationale for more extensive cleanup for PAH near OF53A and its net benefit is not explained.

Other EPA revisions and changes between the August 2015 and June 2016 drafts of the FS that diverge without explanation from the RI and BLRA (and from each other) include:

- On page 1-24, EPA identifies 66 COCs posing unacceptable ecological risks and determines that 20 of these COCs "pose risks ecologically high enough to consider development of a remedial action." EPA presents no details of how this risk management decision was made and or how it is consistent with the Baseline Ecological Risk Assessment (BERA).

- The 2,4′ and 4,4′-DDD, -DDE, -DDT (DDx) PRG for RAO 6 decreased substantially and is now based on sculpin tissue residue instead of sandpiper.

- EPA's proposed background values are still based on inappropriately derived upstream bedded sediment statistics that are unlikely to represent achievable cleanup levels for the site as they do not account for anthropogenic influences, which are known in the scientific literature to exist throughout the Willamette basin.[19] The FS also does not present background concentrations for

[15] See, LWG, *List of Significant Issues with EPA's Revised FS Sections 3 and 4* (September 8, 2015), Issue 17 at pp. 44-48. (included within Attachment 1). The LWG's comments on the August 2015 FS are included as Attachment 1 and incorporated by reference.
[16] For example, the uncertainty analysis in Appendix I concludes that Alternative B is statistically indistinguishable from the no action alternative. This disagrees with figures in Section 4.2 that shows that the biggest drop in HQ and cancer risk is from the no action alternative to Alternative B as compared to the other alternatives.
[17] See, LWG, *List of Significant Issues with EPA's Revised FS Sections 3 and 4* (September 8, 2015), Issue 3 at pp. 9-13 (included within Attachment 1).
[18] See, e.g., Table 4.2-1 of EPA's August 2015 FS.
[19] *Role of Background in the CERCLA Cleanup Program*, OSWER 9285.6-07P (May 2002), page 3 ("[T]he CERCLA program, generally, does not clean up to concentrations below natural or anthropogenic background levels.").

surface water and does not present sediment background concentrations for all chemicals with sediment Preliminary Remediation Goals (PRGs).

- Sediment PRGs for RAO2 and RAO6 as well as riverbank PRGs for RAO9 for the five PCDD/Fs congeners are now all based on background concentrations. Background PCDD/F concentrations for individual congeners are presented in Appendix B, Table B2-4 of EPA's FS. The background values, however, are based on limited and poor quality data (with elevated detection limits) and involve taking the 95 UCL of detection limits for congener datasets based on all non-detects. In fact, only one congener has sufficient data (1,2,3,4,7,8-HxCDF) to calculate a background value and even that is limited (13 of 31 samples were non-detects). Thus, most of the background "values" are based on a 95% UCL of the detection limits rather than actual detections of contaminants. The background values are skewed quite low compared to those calculated for other urban watersheds and are of similar uncertain statistical validity.

And while EPA's explanation of its development of its preferred Alternative I appropriately recognizes that Portland Harbor is a large and complex site where location-specific issues are important, EPA's June 2016 FS continues not to resolve a number of the LWG's prior questions[20] about how EPA's alternatives contribute to meaningful risk reduction at the site consistent with CERCLA and the NCP:

- EPA's calculation of PAH PRGs (and use of such PRGs for calculating post-construction risk) for minor or non-existent PAH fish consumption risk are not explained and not supported by the risk assessments.

- EPA's calculation of PAH PRGs for direct contact are not explained and are not supported by the risk assessments.

- There continues to be an issue with EPA's modeled dioxin/furan tissue concentrations. In the BHHRA, the site-wide risk from the total TEQ based on the 95%UCL or maximum concentration for actual tissue data was 2 x 10-4. For Alternative A, the site-wide risk from 1,2,3,4,7,8-HxCDF alone based on an average concentration is 6 x 10-4. There is no way that the risk from an individual congener can be higher than the total TEQ, and EPA's methodology therefore drastically overestimates the risk in a way that cannot be supported scientifically. The FWM is used by EPA to back-calculate concentrations of chemicals of concern (COCs) in sediment associated with acceptable, risk-based human health and ecological concentrations in fish tissue as calculated using the baseline risk assessment. This influences sediment PRGs and hence RAOs, so uncertainty originating with the FWM cascades, having compounding effects on the evaluation of remedy alternatives, and could result in additional remediation costs with no meaningful gains in risk reduction. We identify the following shortcomings with EPA's application of the FWM at the Site:

    - A comprehensive and detailed Conceptual Site Model (CSM) for the Site in total, and for the relationship between COC sediment and fish tissue concentrations specifically, has not been presented by EPA. This means that EPA's chief assumptions for the FWM related to steady-state conditions (in a flowing water body), the completeness of the site characterization dataset, regional contributions of COCs, and the apparent relationship

[20] See also LWG, *List of Significant Issues with EPA's Revised FS Sections 3 and 4* (September 8, 2015) (included within Attachment 1).

between sediment and fish concentrations cannot be collectively synthesized in terms of their overall coherence and veracity.

- Based on an examination of the empirical data for the Site, no statistical relationship is observed between sediment and fish tissue concentrations for DDx and PCDD/Fs at the concentrations relevant to risk decision making. This means that the FWM - which assumes such a relationship exists – is not reliable and that the conclusions reached on its basis are fundamentally flawed.

- Good modeling practice was not used by EPA for the FWM, and in particular sufficient model documentation detailing the work does not exist. Adequate model documentation is one of several criteria used by EPA and other international regulators for determining the acceptability of a model for regulatory decision making (USEPA 2009, EFSA, 2014, Grimm et al., 2014).[21]

- The Food Web Model (FWM) used to calculate sediment PRGs from tissue PRGs was calibrated using PCB data. However, the model provided unachievable results for PCBs (zero listed in EPA FS Table 2.2-5 table). Predicting sediment PRGs using this model has even greater uncertainty for other compounds (e.g. DDx). This uncertainty effects the use of the model in the near field potentially more dramatically than at a site wide basis which is particularly evident where the sediment SWAC values are uncertain by an order of magnitude. Assessing model performance along the continuum of concentrations and scales of application (site-wide or near field) to assess the goodness of fit is necessary to evaluate whether model performance is acceptable, especially in areas of uncertainty in SWAC concentration at the low concentration range driving PRG derivations.

- Section 2.2.1 of the FS, under ARAR-based COCs, states "contaminants that were detected in upland media (storm water and groundwater) that may potentially migrate to the river at concentrations that would exceed the Safe Drinking Water Act MCLs and national or State of Oregon water quality criteria were also designated as ARAR-based COCs." This results in inclusion of PRGs for constituents not identified as a risk in the BHHRA. Further, it is inconsistent with EPA and DEQ rules to apply MCLs to porewater.[22]

- EPA continues to identify Regional Screening Levels (RSLs) as PRGs. For example, RAO 4 incorporates the tap water RSL for Manganese. That current manganese RSL is derived from outdated toxicity evaluation without clear adverse effects. A more recent and credible source of toxicity information (ATSDR 2012) [23] concludes that an oral threshold value for manganese

[21] Grimm, V., J. Augusiak, A. Focks, B.M. Frank, F. Gabsi, A.S.A. Johnston, C. Liu, B.T. Martin, M. Meli, V. Radchuk, P. Thorbek, and S.F. Railsback. 2014. *Towards better modelling and decision support: documenting model development, testing, and analysis using TRACE*. *Ecological Modelling* 280:129–139; EFSA PPR Panel. 2014. *Scientific Opinion on good modelling practice in the context of mechanistic effect models for risk assessment of plant protection products*, EFSA Panel on Plant Protection Products and their Residues. *EFSA Journal* 12(3):3589. 92 pp. doi:10.2903/j.efsa.2014.3589; *Guidance on the Development, Evaluation, and Application of Environmental Models*. EPA/100/K-09/003. Office of the Science Advisor, Council for Regulatory Environmental Modeling. U.S. Environmental Protection Agency. March 2009.
[22] See, 40 CFR Part 141 § 141.23(a). See also, OAR 340-041-0340, Table 340A.
[23] Agency for Toxic Substances and Disease Registry (ATSDR). 2012. Toxicological Profile for Manganese (Update). U.S. Public Health Service, U.S. Department of Health and Human Services, Atlanta, GA.

cannot be derived. Use of outdated and poorly supported toxicity criteria is inconsistent with EPA guidance.[24]

- EPA's FS states, "Compliance with ARARs is determined by whether an alternative will meet all of the chemical-specific, action-specific, and location-specific ARARs and/or those that are to be considered (TBC) identified in Tables 2.1-1 through 2.1-3." Table 2.1-1 identifies EPA Regional Screening Levels for groundwater as TBC values. "TBCs are not ARARs … but may be considered and used as appropriate, where necessary to ensure protectiveness."[25]

- EPA establishes a PRG for total chromium; however, only hexavalent chromium was identified in the human health risk assessment as potentially posing unacceptable risk.

The RI and BLRAs do not provide information or a foundation for establishing cleanup goals or remedial actions for source control. The LWG has previously commented that EPA should not establish PRGs or RAOs for source control media that were not assessed in the BLRAs or RI.[26]

The June 2016 FS uses a new rationale for including riverbanks in the FS. "Since river bank contaminations (sic) are directly linked to the sediment bed and receptors through proximity and source and migration pathways, the known areas of contamination are included here and elsewhere in the FS. Including these areas supports the evaluation of and selection of alternatives in case it is determined that river bank contamination is best suited for remediation in conjunction with in-river activities." [27] This new rationale does not address the LWG's prior stated concerns.

The FS references an attached riverbank database, but the database was not included. Consequently, the Disputing Respondents continue to have no way to verify any of EPA's FS decisions regarding remediation of the river banks. Regardless, prior LWG issues with EPA's source control approach remain. These issues include that PRGs should not be established based on exposure pathways being evaluated in upland source control evaluations under DEQ oversight, and that none of these upland media were evaluated in the BLRAs or Remedial Investigation (RI). EPA's use of sediment PRGs for riverbanks, even on areas rarely inundated and without considering attenuation, is technically inappropriate. Delineations of groundwater plumes and riverbanks, and a zero post-construction restoration time frame are arbitrary. There is a total lack of data and analysis as to what risk considerations are driving the specific remedial actions delineated (and therefore how this will be refined in the design phase when further data/analysis is available) and what specific remedial actions will be implemented in which areas driven by those risks. This arbitrary delineation is then carried forward into the evaluation of alternatives and given weight for assessing the relative effectiveness of alternatives. Further, the last-minute incorporation of riverbanks in the FS, when they have not been fully delineated, is counter to EPA policy and guidance.[28]

In February 2001, a Memorandum of Understanding related to the Site was executed among EPA, Oregon DEQ and several state, federal and Tribal natural resource trustees. That MOU provided that

---

[24] *Risk Assessment Guidance for Superfund: Volume 1 – Human Health Evaluation Manual Part B, Development of Risk-based Preliminary Remediation Goals.* EPA/540/R-92/003. Office of Emergency and Remedial Response, Washington, D.C. (EPA 1991); *Human Health Toxicity Values in Superfund Risk Assessments*. OSWER Directive 9285.7-53. Office of Solid Waste and Emergency Response, Washington, D.C. (EPA 2003)
[25] *CERCLA Compliance with Other Laws Manual*, EPA/540/G-89/006 (Interim Final, August 1988), p. 1-13.
[26] LWG Comments on Revised FS Section 2 (June 19, 2014)
[27] EPA June 2016 FS page 1-17.
[28] 40 CFR 300.430 ("The purpose of the remedial investigation (RI) is to collect data necessary to adequately characterize the site for the purpose of developing and evaluating effective remedial alternatives.")

EPA would be the lead agency for investigating and cleaning up contamination in the river sediment and DEQ, using state cleanup authority, was designated as the lead agency for identifying and controlling upland sources adjacent to or near the river. Pursuant to that MOU, the Portland Harbor Joint Source Control Strategy was finalized by EPA and DEQ in December 2005. Since that time, many owners and operators of facilities along the river, including several of the Disputing Respondents, have been actively involved with DEQ, planning and implementing source control measures. In the FS, EPA has ignored many of those fully or partially completed actions and identified groundwater and riverbank concerns that in some instances simply don't exist anymore, and in others are sites where property owners have agreed upon remedies to be implemented under DEQ oversight at or before the time of the in-water remedy. There is no reason for EPA to now both ignore and undermine those efforts by inserting RAO 9 into the FS, ignoring completely the DEQ Upland Source Control Update Summary Report most recently updated by DEQ in March 2016.

Several site-specific examples of errors arising from EPA's determination to select remedies for riverbanks without any foundation in the RI or risk assessments are set forth in the Appendix, attached and incorporated herein. To take a representative example, the FS does not account for upland work already performed by NW Natural at the Gasco facility pursuant to its DEQ Voluntary Agreement and in close coordination with EPA, the result of which leads to EPA to include presumptive excavation with presumptive cover material along the entire Gasco Sediments Site riverbank in all alternatives. This presumptive riverbank remedy is not supported by technical rationale, prevents meaningful comparison of the performance of technologies and limits the evaluation of multiple technologies that may perform equally effectively, is inconsistent with the range of technology assignments evaluated along different portions of the Gasco Sediments Site riverbank in the May 2012 Gasco Engineering Evaluation/Cost Analysis, and does not account for known impacts that will occur to existing upland structures and potential future upland source control structures. Similarly, The FS ignores that Gunderson has implemented permanent riverbank source control measures at some riverbank areas that are identified by EPA as needing remediation under the oversight of the Oregon DEQ and in accordance with the requirements set out in the DEQ-EPA Portland Harbor Joint Source Control Strategy. Gunderson has also completed interim source control measures under DEQ oversight at the remainder of the riverbank areas that are identified by EPA in the FS and agreed that additional permanent measures will be implemented concurrent with the adjacent in water remedy. And the FS ignores the riverbank remedial action implemented by Evraz at its Rivergate property, a remedial action based on a source control decision made by the Oregon Department of Environmental Quality and concurred with by EPA.

The Feasibility Study is the appropriate point for EPA to bring in risk management principles. EPA's sediment guidance directs that cleanup objectives "should reflect objectives that are achievable from the site cleanup."[29] The FS should therefore focus on those chemicals and cleanup levels that are technically practicable to be reached through a sediment remedy based on site-specific considerations.

- *Equilibrium*. A sediment remedy must include evaluating what is deposited within the Study Area, both physically and chemically (i.e., potential future bedded sediment equilibrium). EPA has not conducted such an evaluation.[30] The assumption that background sediment

[29] *Contaminated Sediment Remediation Guidance for Hazardous Waste Sites,* OSWER 9355.0-85 (EPA, December 2005) ("*Sediment Guidance*"), page 2-15.

[30] As recently as April 2015, EPA endorsed the concept of equilibrium as a measure of the most a sediment remedy an accomplish and committed to perform an equilibrium evaluation in Section 4 of the FS. "EPA will conduct an equilibrium evaluation in Section 4 of the FS. The most appropriate means to evaluate whether RAOs or PRGs are achievable by any of the alternatives being developed in Section 3 of the FS is to conduct the detailed evaluation in Section 4 of the FS using the first seven NCP criteria. This information will be considered in developing the final

concentrations are the same as equilibrium is invalid. The cleanup goal for PCBs of 9 parts per billion (ppb) based on EPA's calculation of background concentrations is not achievable or sustainable by existing technology nor by nature itself. Experience gained at other sediment remediation projects conducted nationally and in Region 10 strongly argue that background should not be used to establish cleanup goals when likely ongoing contaminant inputs from upland sources within the Site and upriver of the Site exceed EPA's calculation of background. The LWG provided EPA an evaluation of equilibrium concentrations for the Site. Equilibrium is the only reliable indicator of future concentrations that can be achieved.[31]

Perhaps the most important certainty at the Site is that the Lower Willamette River flows from south to north. As part of the flow, the river carries sediments which are deposited within the Site. Equilibrium is controlled in large part by concentrations of contaminants in the incoming sediments from upstream. This creates a bounding condition such that no amount of active remediation within the Site can achieve or sustain concentrations lower than that of the equilibrium level. Based on relevant empirical data collected by the LWG, no sediment remedy is likely to achieve PCBs lower than 20 ppb in the foreseeable future.[32]

- *Realistic Exposures*. As described in the Sediment Guidance: "A risk management process should be used to select a remedy designed to reduce the key human and ecological risks effectively."[33] One of the fundamental flaws in the FS is the absence of any explicit, documented risk management. The term "risk management" is never used in the June 2016 FS or the Proposed Plan. Risk management in the Superfund program requires the consideration of the advantages and disadvantage of cleanup alternatives and balancing of trade-offs. This analysis includes an evaluation of the uncertainties at the Site, including uncertainties in the reliability of the exposure data used to identify the risks. One of the key factors in decision-making is: "[t]he likelihood of the exposure actually occurring should be considered when deciding the appropriate level of remediation, to the degree that this likelihood can be determined."[34]

  At Portland Harbor, the risk assessments, particularly for human health, are built on a cascade of unrealistic and improbably conservative assumptions regarding exposure and durations. Unacceptable risks to various consumers of fish are based on questionable assumptions of how many resident fish people eat, from which areas of the river, how the fish are cooked, and for how many years any one person eats them. The assumptions are not placed in an overall estimate that is conservative but within a realistic range of exposure, as required by the NCP.[35] EPA's description of this risk – people should eat no more than 6 fish meals every 10 years – is not well explained in terms of the exposure assumptions supporting the risk and those locations within the Site that actually pose an unacceptable risk for consumption of resident fish. Further, the assumptions are not comparable to assumptions used at other large sediment sites.

  And, most important, EPA's June 2016 FS fails to document how the risk assumptions have been considered when evaluating alternatives. Nowhere in EPA's FS are the exposure assumptions

---

remediation goals/cleanup levels." *EPA Response to LWG's March 25, 2015 Comments on the Portland Harbor FS Section 2* (EPA, April 10, 2015), page 2.

[31] See note 29, *supra*.

[32] *LWG Recommended Approach to Portland Harbor Cleanup Lower Willamette River* (October 19, 2015), Attachment 2. The LWG's comments on to the National Remedy Review Board provide additional detail on the bases for this dispute and are incorporated by reference in this request for dispute resolution.

[33] *Sediment Guidance*, page 7-1.

[34] 40 C.F.R. § 300.430(e)(2)(I)(A)(4) and NCP Preamble at 55 FR 8700, 8710 (March 1990).

[35] NCP Preamble, 55 FR 8710.

with respect to risks from fish consumption expressly stated. Rather, the FS simply describes astronomical risks at the Site and the extraordinary measures needed to address such largely illusory risks. The absence of such information in EPA's FS demonstrates that an important element of risk management -- the reliability of the exposure assumptions -- has not been sufficiently considered.

Finally, the FS does not identify which areas of the Site currently pose the highest risk and should be prioritized for remediation. At a 10-mile Site that, according to EPA's FS, encompasses nearly 300 acres requiring active remediation and likely close to 20 years to perform, it would seem necessary and prudent to establish a basis for prioritizing and sequencing the cleanup of the higher risk areas. EPA's failure to do so shows that it is not effectively managing the actual risk.

EPA does not explain its conclusion that Alternative B alone fails to comply with ARARs. Although EPA's August 2015 FS found that all alternatives met ARARs, this FS concludes that Alternative B would not meet certain water quality criteria. It is unclear how EPA reaches this conclusion only as to Alternative B, since EPA states elsewhere that it lacks information to evaluate the effectiveness of meeting these criteria for any of the alternatives under consideration.

Information in the RI demonstrates that surface water quality criteria for some COCs (e.g., PCBs and D/F) will never be met by any sediment cleanup at the Site because of upstream concentrations.[36] EPA notes on page ES-17 of the FS, "It is expected that MNR in conjunction with ICs and source control, including control of upriver sources, is necessary to achieve surface water RAOs.".

Similarly, MCLs are likely not achievable throughout the spatial extent of some groundwater plumes along the shoreline or out under the river, and achievement of such criteria are not necessary to design and implement groundwater and sediment remedies that are protective of all reasonable and likely future uses of groundwater. EPA should either determine that MCLs are not applicable, relevant or appropriate because MCLs do not apply to the groundwater in this context, or it should waive these water quality criteria ARARs now. MCLs are not applicable, relevant or appropriately applied to groundwater here because the Oregon statute designates the Lower Willamette River as a potential public and private water supply only following adequate pretreatment[37] and because the federal Safe Drinking Water Act under which MCLs are developed designates that drinking water is appropriately sampled at the point of distribution.[38]

2. EPA's June 2016 FS continues to lack complete and transparent evaluation of the long- and short-term effectiveness and cost of its alternatives, as well as of the degree to which those alternatives reduce the toxicity, mobility or volume of hazardous substances through treatment, including treatment of PTW.

[36] The LWG's draft FS stated, "Per the RI, the upstream background surface water 95th percentile UPL concentrations of arsenic, total PCBs [polychlorinated biphenyls], total PAHs, dieldrin, 4'4-DDT, sum DDT, and 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) entering the Site exceeded the respective fish consumption values for these contaminants." EPA subsequently rejected the RI surface water upriver statistics (i.e., the UPL) and removed nearly all discussion regarding upriver surface water concentrations from the final RI. However, even if just the arithmetic mean of upriver surface water data were used (which can be calculated from the database provided in the final RI), concentrations of aldrin, arsenic, BEHP, DDD, DDE, DDT, hexachlorobenzene, PCBs, several PAHs, and 2,3,7,8-TCDD toxic equivalent entering the Site exceed both the federal and state fish consumption WQC for these contaminants.

[37] OAR 340-041-0340, Table 340A.

[38] 40 CFR Part 141 § 141.23(a).

The LWG provided extensive comments on the alternatives analysis in EPA's August 2015 FS; again, we will attempt to avoid repetition of those comments.[39] To begin at the beginning however, we remain concerned that an inadequate conceptual site model precludes a robust comparative evaluation of alternatives. Many of the issues discussed above concerning EPA's failure to explain how its alternatives will result in meaningful risk reduction define not only what actions may be necessary to protect human health or the environment but the extent of long- and short- term effectiveness and reduction in toxicity, mobility or volume of hazardous substances that might be expected from any given alternative. Finally, EPA's omission of major cost components of its alternatives, and its significant underestimation of other cost elements precludes meaningful comparison of the trade-offs between time, impacts to the community, and the financial impacts to responsible parties, who include local employers and service providers as well as municipal, state and federal public entities.

EPA's inadequate conceptual site model does not provide a foundation for a thoughtful comparative evaluation of alternatives. The June 2016 FS does not sufficiently describe the relevant Site features, baseline risks, role of sources, fate and transport, and site uses and other important factors necessary to understand the potential cost effectiveness of various remedial technologies or EPA alternatives.[40] Information on contaminant fate and extent is completely missing from the CSM discussion. In fact, the site has been characterized by EPA based on aggregated sediment data without regard to time dependent changes that reflect the kinetics of rate and extent operating in this system. It is not possible to accomplish a valid alternatives evaluation without an adequate operationalized theory and model of the site.

The LWG previously commented that EPA's August 2015 draft FS needed a more balanced presentation of all sources in Section 1 (groundwater, riverbank, and stormwater).[41] Again, this FS neglects to include a discussion of stormwater sources to the Site.

In the June 2016 FS, EPA added sites and edited the discussion of riverbanks and groundwater in Section 1. Based upon our preliminary review, the identification and presentation of these sites contains multiple errors set forth in the attached Appendix. For example, PCBs are listed as a riverbank contaminant at Arkema, but have only been detected in a small number of samples below the applicable screening levels (with one exception for a conservative bioaccumulative SLV). Further, the June 2016 FS neglects to include a discussion of upland source controls that have been implemented and the performance of those source controls in the remedial evaluations, such as the riverbank remedial action that has been completed at the Evraz Rivergate site under DEQ oversight and with EPA concurrence. The Time Oil groundwater plume identified in section 1.2.3.4 is fully controlled and meets JSCS values for all constituents other than potentially arsenic, which does not appear to be associated with site-related groundwater contamination.

---

[39] *LWG Comments on EPA's December 19, 2014, Feasibility Study Proposed Final Draft Section 1* (January 2, 2015); *LWG Comments on Revised FS, Section 2* (June 19, 2014), *LWG Comments on Revised FS Section 2* (March 25, 2015); *LWG Responses to EPA's Responses to LWG Comments on Feasibility Study Revised Draft Section 2 Text* (April 23, 2015); *LWG List of Significant Issues with EPA's Revised FS Sections 3 and 4* (September 8, 2015); *Additional Comments on EPA's Revised FS Sections 3 and 4* (October 8, 2015); *FS Section 3 and 4 LWG Significant Issue Clarifications* (October 8, 2015). The LWG's comments on EPA's August 2015 FS provide additional detail on the bases for this dispute and are collectively enclosed at Attachment 1 and incorporated by reference.

[40] At contaminated sediment sites in particular, "The development of an accurate conceptual site model, which identifies contaminant sources, transport mechanisms, exposure pathways, and receptors at various levels of the food chain" is "especially important…because the interrelationship of soil, surface and groundwater, sediment and ecological and human receptors is often complex." *Sediment Guidance*, p. ii.

[41] *LWG Comments on EPA's December 19, 2014, Feasibility Study Proposed Final Draft Section 1* (January 2, 2015), p. 5 (included within Attachment 1).

EPA's alternatives evaluation is incomplete and almost entirely qualitative. EPA's June 2016 FS does not provide quantitative long-term effectiveness estimates, provides only very limited quantitative short-term effectiveness estimates, and attempts no cost-effectiveness evaluation.

EPA fails to explain its technical analyses, many of which appear to contain significant errors. Many of the new analyses EPA added to this FS appear to be technically incorrect and based on broad generalities, such as the surface water analysis approach included in Appendix K. This analysis appears to assume that surface water column concentrations will decrease by the same percentage as surface sediment SWACs, which ignores other inputs that will not change when sediments are remediated such as stormwater, groundwater, and upstream inputs.

Abbreviated short-term effectiveness evaluation. The June 2016 FS continues to inadequately address short-term effectiveness, particularly for an FS with alternatives that may require decades to complete. The FS makes no attempt to quantify impacts to the community, construction workers, and the environment except based on construction duration.

EPA's June 2016 FS does contain a limited evaluation of dredge release impacts. As the LWG has previously commented,[42] guidance strongly recommends a comprehensive and quantitative evaluation of dredge release impacts.[43] The June 2016 FS has a somewhat enhanced discussion of dredge residuals and releases, but no new quantitative evaluations were added. The June 2016 FS does not present a comprehensive and quantitative evaluation of dredging releases, the impacts on short-term effectiveness during dredging, and the associated increases in both human health and ecological risks. EPA continues to cite the findings of one project (Hudson River Phase 2) as the basis for its assumption that contaminant releases during dredging in Portland Harbor will be only 1% of the total contaminant mass dredged (as compared to the 3% recommended by the LWG). EPA further uses this one project to support the concept that most of the releases greater than 1% can be eliminated by quickly covering dredge residuals, which is not fully supported. EPA implies elsewhere that residual covers should be applied on a daily basis, a requirement without precedent for a project of this scale. However, the impacts of such an approach on costs and duration of the alternatives are not quantified or further evaluated.

EPA assumes that construction and use of sheet pile barrier walls as dredge water quality control measures based on the presence of NAPL in water depths less than 50 feet (see Appendix O) will support the short term effectiveness of all alternatives. The FS still fails to incorporate the time to install sheet pile walls in each alternative's duration or lower production dredging within the confined space and does not evaluate the cost effectiveness of sheet piles in general. The costs EPA uses ($2,750 per linear foot) would not be sufficient for water depths approaching 50 feet; these depths would require a much more expensive cofferdam type system. EPA also continues to show figures that depict sheet piling in greater than 50 feet of actual water depth, which is technically infeasible. (There continue to be mistakes in EPA's mapping of the appropriate water depths.) These figures also imply that sheet piles will be installed in the navigation channel, which would infeasibly obstruct vessel traffic. Sheet pile would also impact ongoing water dependent operations and nearshore fish migration. EPA does not consider the inability to remove contaminated material within the crenulations of the containment barrier and does not evaluate whether sheet piles in the navigation channel could be permitted by USACE.

[42] *LWG List of Significant Issues with EPA's Revised FS Sections 3 and 4* (September 8, 2015), Issue 9, pages 23-24. (included within Attachment 1).
[43] *Sediment Guidance*, page 6-2.

Long-term effectiveness evaluations are qualitative and not grounded in scientific method. Rather than quantitatively evaluating long-term effectiveness (all evaluations are based on a time zero SWAC), EPA has added a new approach of evaluating alternatives using "interim targets," which are basically ten times above the PRGs, and then EPA compares post-construction risks to these interim targets for evaluating the "overall protection of human health and the environment" for each alternative. EPA hypothesizes that if alternatives meet these interim targets, it is reasonable to assume the PRGs will be met through subsequent natural recovery in 30 years. It is confusing for EPA to claim they cannot quantitatively estimate MNR and then decide that MNR will work in 30 years. EPA also estimates "residual risk" as the estimated risk if all PRGs are met (i.e., risk at PRGs). EPA evaluated long-term effectiveness using a "magnitude of risk" defined per EPA page 4-10 as the ratio of the post construction risk to the residual risk. EPA does not explain why this analysis is technically superior to either the LWG's effectiveness evaluations or its own prior evaluations in the August 2015 FS. Alternative I does not meet some of these interim targets, yet EPA still picks this alternative as the preferred alternative which seems logically inconsistent. Figure 4.2-6 shows that none of the alternatives even come close to the ten times PRG levels. The same is true with Figure 4.2-4 (except Alternative G) and with Figure 4.2-2 (except Alternatives F and G).

These methodologies fail to evaluate remedy effectiveness on appropriate spatial scales (fish consumption and ecological exposure), they fail to assess near shore deposition, and they fail to acknowledge the time frame and feasibility of achieving PRGs given upgradient concentrations and remedial action time frames. EPA in fact states that Alternative H "achieves PRGs at the end of construction," which is incorrect, because the very low PRGs for many COCs are not achievable through active construction.

The Monitored Natural Recovery (MNR) evaluation is insufficient to support the alternatives evaluation. The FS continues to omit key components of an MNR evaluation as required by guidance including: 1) an adequate CSM; 2) appropriate evaluation of multiple lines of empirical evidence; and 3) a quantitative evaluation of natural recovery and the associated long-term (i.e., after "time zero") outcomes of the alternatives.[44] New concerns with the June 2016 FS include:

- EPA added new information on bathymetry changes and fish tissue. In Section 3.6.1.3, EPA's updated evaluation of fish tissue concentrations over time completely ignores 2002 data without any explanation, and incorrectly evaluates data from 2007, 2011, and 2012. EPA should not combine temporally disparate data to establish baseline conditions.

- EPA states that, "a minimum deposition rate of 2.5 cm/year was assumed as the criteria [sic] for effective MNR."[45] This criterion is obviously not used by EPA in the FS because the FS assumes MNR as the applicable technology for all areas outside SMAs (as opposed to applying MNR in just areas exceeding the minimum deposition rate). While deposition is a mechanism of natural recovery, there are other mechanisms occurring at this site. These mechanisms include biotic and abiotic transformations that remain unevaluated leaving the CSM incomplete. Further, the assumption of 2.5 cm/year as a criterion for natural recovery in the absence of a coherent CSM is without justification or merit. EPA has added some text that implies effectiveness is related to "mass removal" of contaminants. Page ES-15 states the advantage of Alternative H is that "it removes more contamination." Guidance is clear that

[44] *Technical Resource Document on Monitored Natural Recovery*, EPA/600/R-14/083 (EPA, 2014), Section 1.3.2, page 6.*Sediment Guidance*, page 3-14. See also, *LWG List of Significant Issues with EPA's Revised FS Sections 3 and 4* (September 8, 2015), Issue 8, pages 19-22.
[45] June 2016 FS, page 3-34.

mass removal is not an appropriate way to evaluate sediment remediation alternatives; rather the evaluation must address reduction in risk.

EPA's PTW approach is inconsistent with guidance and fails to result in reduction in toxicity, mobility or volume of hazardous substances commensurate with its extraordinary projected cost. As discussed in detail in the LWG's prior comments,[46] EPA has designated as PTW large geographic areas with relatively low concentrations of contaminants of concern based primarily on its evaluation of the human health fish consumption criteria, which is an exposure pathway not based on highly toxic criteria and not typically used for PTW "highly toxic" designations. The conclusion that this exposure pathway should not be the basis for a PTW designation is corroborated by 2012 fish tissue data, previously shared with EPA, that show PCB concentrations in fish tissue have declined significantly resulting in human health risks that are likely to be lower than 10^{-3}. The FS fails to satisfactorily explain how sediments in these large areas are highly mobile or highly toxic and cannot reliably be contained in place. For example, the FS does not explain or justify why sediment at the relatively low concentration of 200 ppb PCBs is "highly toxic," which is generally defined as a concentration several orders of magnitude above levels that allow for unrestricted use and unlimited exposure. At many other large sediment sites around the country, EPA's cleanup level for total PCBs is 1 part per million. The level requiring special disposal under TSCA is 50 ppm (50,000 ppb). Sediment at 200 ppb PCBs is well below what is considered an acceptable cleanup level at these other sites. And, as discussed above, EPA's recalculated site-wide PCB SWAC of 208 for Alternative A (No Action) used in Table J2.3-1a of Appendix J for the residual risk assessment exceeds this arbitrary PTW threshold, undermining the usefulness of the concept as a balancing criteria or otherwise.

The June 2016 FS includes new explanations that further show that EPA's PTW approach is inconsistent with guidance and flawed. For example, EPA states, "'Reliably contained' was not used in identifying PTW but rather was used to determine what concentrations of PTW could be reliably contained."[47] This clearly contradicts the guidance, which discusses "reliably contained" as part of PTW identification.[48]

EPA should not identify materials that can be reliably contained as "principal threat waste." EPA admits (in Table 3.2-2) that all COCs at the concentrations present in the site, with just two exceptions--chlorobenzene and naphthalene, *can* be reliably contained. Thus, none of the areas where these contaminants are absent should be designated as PTW. Blanket identification of large areas of relatively low concentration sediments as PTW is neither required by the NCP nor necessary to protect public health or the environment.

Similarly, the June 2016 FS provides no discussion or explanation of how material with sediment concentrations above the EPA-identified "highly toxic" thresholds or the presence of "globules or blebs" of Non-Aqueous Phase Liquid (NAPL) pose risk of contaminant migration. Further, EPA's PTW-NRC footprint is mapped very differently in the FS and Proposed Plan, showing that, even at this late date, EPA has not spent adequate time evaluating this issue.

Remediation waste management components of EPA's alternatives are difficult to understand, appear in many cases to be inappropriate or inconsistent with existing requirements, and seem likely to add significant cost without contributing any additional risk reduction benefit. EPA's June 2016 FS no

[46] See, e.g., *LWG List of Significant Issues with EPA's Revised FS Sections 3 and 4* (September 8, 2015), Issue 2 and page 8.
[47] June 2016 FS, page 3-3.
[48] NCP Preamble, 55 FR 8666 at 8703 (March 8, 1990); *A Guide to Principal Threat and Low Level Wastes*, OSWER Superfund Publication 9380.03-06FS (November 1991).

longer includes the disposal decision tree found in the August 2015 FS. Although that decision tree contained multiple errors and inconsistencies, the absence of any such tool in the June 2016 FS makes it difficult to determine EPA's disposal assumptions for FS purposes (or the Proposed Plan).

New EPA text in the June 2016 FS makes a few broad statements that could have major impacts on cost. For example, on Page 3-28, EPA notes that all detectable concentrations of pesticides removed from the site would need to follow Oregon Pesticide Rule procedures as interpreted by EPA. This has implications well beyond any areas highlighted by DDx RALs.[49]

Confined Disposal Facility (CDF) acceptance criteria – As the LWG previously commented, EPA made some of the CDF acceptance criteria and performance standards more conservative (Table 3.4-7) since the T4 CDF 60% design, even though EPA references that design as the source of the criteria and standards. This situation has not changed for the June 2016 FS. No rationale is provided for why the changes make the remedy more protective or effective.

Cost estimates, volumes, production rates, and construction durations are inaccurate and lack transparency. The LWG previously commented on the August 2015 draft FS that EPA underestimated volumes and construction durations and used impossibly aggressive production rates and unattainable efficiencies given the required BMPs, complex disposal requirements, nearby residential community, and heavily used Willamette River. Due to these factors and other questionable costing approaches, the LWG commented that EPA's costs were substantially underestimated and consistently minimize the apparent costs of the larger alternatives and dredging, as compared to the smaller alternatives and capping. EPA's June 2016 FS cost estimates appear to exacerbate these problems, resulting in even lower overall costs for each alternative.

Missing cost elements:

- EPA's cost estimate does not include the 3 to 5 year anticipated "initial conditions" assessment, subsequent pre-remedial design investigations, or additional riverbank sampling and remediation contemplated in the FS and Proposed Plan to be identified in conjunction with this post-ROD sampling. At the Head of the Hylebos project, which was primarily a PCB remediation involving roughly 44 acres, pre-remedial engineering investigation costs amounted to roughly 16% of remedy implementation costs.

- EPA does not appear to include any Oregon Department of State Lands (DSL) costs for access, leases and easements required for investigation, dredging, capping and monitoring activities. In documents the LWG obtained through its FOIA request to EPA, EPA's FS contractor acknowledged that these costs – which he characterized as "incredibly large" – were not included in the FS evaluations.[50]

- EPA's cost estimate does not include agency oversight and participation costs. These costs have represented more than 27% of RI/FS costs at Portland Harbor.

- EPA's cost estimate does not include the required 12-inch daily cover layer, which appears to be a new requirement to reduce dredging releases.

- EPA does not factor the need to acquire and develop transload facilities into the schedule.

[49] See, *Top 10 State Issues for Proposed Plan* (February 8, 2016) (R10-100005865) (Attachment 3).
[50] See, *DEQ/EPA Cost Notes* (January 28, 2016) (R10-100007897), p. 11 (Attachment 4).

Underestimated cost elements:

- EPA continues to assume unattainable production rates and efficiencies assuming construction 24 hours per day for the basis of the project schedule and cost estimates. Stepping time is completely ignored. Furthermore, the need to operate in an active navigational channel will mandate the need to move the dredging equipment during each ship movement. According to the Columbia River Pilots Association there are 2 to 5 of such movements through this site daily. Each will represent a significant disruption and will result is significant loss of dredging and remedial project efficiency. The FS assumes that numerous requirements for innovative and complex dredge Best Management Practices (BMPs), precision dredging techniques, use of sheet pile barriers in some areas, and a transload and water treatment system (which will act as a bottleneck) will be performed simultaneously without incident or equipment breakdown, and with no additional time on costs.

- We note that the Feasibility Study states that a fixed arm articulated bucket is the preferred dredging option where feasible and that a cable bucket will be used in water depths greater than 40 feet. This would correspond to the fixed arm bucket being used for roughly 80% of the dredge volume and cable bucket for 20%. However, the FS inconsistently assumes in the cost estimate and project schedule that the fixed arm bucket is used for 5% of the dredge volume. The cable bucket has a much higher production rate and lower unit cost than the fixed arm bucket. Correcting this assumption would increase alternative durations by 5 to 15 years, depending on 24- or 12-hour work days, respectively.

- EPA continues to use aggressive dredging production rates. Sections 2.4.3 and 4.2.2.2 present a number of BMPs and controls to minimize impacts. These BMPs will slow dredging production and increase costs. The LWG's past production rates accounted for these anticipated BMPs which are likely needed to meet 404 water quality certification requirements but EPA's current rates do not.[51] Some of these described BMPs and controls include:

    - Sheet piling in select areas
    - Slowing the dredge cycle time to reduce bucket impacts at the bottom
    - Rinsing the bucket to clean off excess sediment between loads
    - Briefly stopping the bucket at the waterline to allow excess water to drain before raising bucket to barge
    - Having precision cuts of only 50% bucket fills on last passes
    - Pumping excess water from barges during dredging
    - Placing a residuals cover daily

[51] See, *Sediment Guidance*, page 6-22 ("Project managers should be aware that most engineering measures implemented to reduce resuspension also reduce dredging efficiency. Estimates of production rates, cost and project time frame should take these measures into account.")

- Modifying the work schedule
- Performing work during low river flows
- Fish capture and removal inside work isolation areas

- EPA also has aggressive dredging rates for riverbank excavations. It is assuming dredging will be completed from the water with a 6.5 cubic yard (cy) bucket loading a telebelt that will transfer material to a haul barge. It is using an aggressive cycle time of 50 seconds for this work yet still implies use of the same BMPs as described above for sediment work.

- EPA's water treatment plant consists of holding tanks and carbon treatment with no additional costs. EPA indicates that the water will be discharged back to the river. Based on past experience in Portland Harbor, this approach is unlikely to be acceptable. T4 dredging required water discharge to the City's POTW. EPA also assumed that water treatment will only be required during the days of dredging. All precipitation will need to be captured and treated, so the system will be required as long as there is dredged material on site.

- Appendix F indicates that Subtitle C material will be hauled to Boardman and then hauled by truck to ChemWaste, similar to what was done for the Gasco Early Action. However, the cost estimate only has 1 day of haul time to Boardman and 18 hours return. The cost estimate assumes that the material would be stockpiled on site at the Boardman transload facility and then loaded into trucks. The Boardman site, used previously for the Gasco Early Action, has only 4 to 9 acres of available space, with the high end of the range assuming that the current operations are terminated to allow for the transloading. This will not be sufficient for the anticipated Subtitle C material EPA plans to remove. For Gasco, the material was loaded directly from the barge to the trucks. The Gasco Early Action processed only approximately 15,000 cy of material, while Portland Harbor will have an orders-of-magnitude-more volume, which will overwhelm the Boardman facility. EPA received a quote from ChemWaste to truck the material from Portland Harbor to their facility as an alternative. However, this would entail 10,555 truck trips of Subtitle C material through Portland neighborhoods.

- The cost estimate appears to assume the Subtitle D material is barged to Bingen and then hauled by truck to the Roosevelt Landfill. There is no analysis of whether the Bingen offloading facility could accommodate 6,200 cy per day of dredged material for processing. EPA is also assuming that diatomaceous earth is added into the sediments to absorb the free water, but they do not account for the $9M in added tonnage for disposal.

- EPA does not provide any details on project schedule related to integration of dredging, daily covers, and caps. Capping materials alone include more than 800,000 cy. Two capping plants working 12 hours per day would be needed to place roughly 200,000 cy per season per LWG estimates; EPA's estimated rates are 600,000 cy per season from two plants with one working 24 hours per day and one working 12 hours per day.

- EPA continues to use a very simplistic approach to estimating dredge volumes, which has a large potential to substantially underestimate the dredge volumes eventually determined in remedial design.

- EPA uses the same 7% discount rate as used in the EPA 2015 draft FS, which heavily discounts the larger alternatives (i.e., Alternative E is discounted a total of 41% and

Alternative G is discounted by 77%). This discount rate is indicated on the first page of EPA's 2000 cost estimate guidance for FSs. However, the second complete paragraph on Page 4-5 of that guidance indicates that a different discount rate can be used as long as it is justified consistent with OMB Circular A-94. Accordingly, the LWG's 2012 draft FS used a discount rate of 2.3%, consistent with guidance as explained in that document. The equivalent treasury rate for 2016 is 1.5%, which is a much more appropriate discount rate at a site where the PRPs include the United States, the State of Oregon, municipalities, public utilities, and many parties whose principal or only source of funding for cleanup are insurance funds outside their investment control. It is also the rate that EPA would presumably use in calculating required financial assurance.[52]

- EPA used a low mobilization/demobilization factor of 1.6%, while the 2012 draft FS used a 15% factor based on project experience at similar sites. EPA is basing its 1.6% percentage on the cost estimate used for the Lower Duwamish River FS—not real construction data.

- EPA used a contingency factor of only 20%, while the LWG's 2012 draft FS used 40%. EPA guidance indicates that the overall contingency for an FS should be in the 20 to 45% range. Thus, EPA is using the lowest possible contingency factor allowed by guidance. EPA cites guidance indicating that larger projects with high costs may have lower overall contingency factors. This may be true for some types of projects, but given the complexity of this Site and the large number of issues that will be refined in design, using the lowest possible contingency factor appears very optimistic and greatly decreases the estimated costs of the alternatives, particularly the largest alternatives.

- EPA used lower percentages for project management (2%), remedial design (2%), and construction management (3%) than EPA guidance (5%, 6%, and 6%, respectively). These factors are also lower than the 2012 draft FS, which used 15% for remedial design and a monthly rate for project management and construction management. Remedial engineering design costs at the Head of the Hylebos were roughly 15% of actual project costs.

- There are significant equipment and contracting issues associated with executing multi-year projects where tens of millions of dollars of equipment need to be mobilized to the Site. The cost estimates do not factor in the standby costs created by idle equipment for two thirds of each year while the construction window is closed.

- In Section 4.2.2.2, EPA discusses the need for air monitoring. Air monitoring costs do not appear to be included in the cost estimate. The June 2016 FS also cites the need for fish tissue monitoring during construction which is not reflected in the costs.

3. <u>The EPA June 2016 FS fails to articulate a clear and understandable framework and schedule for implementation by which each alternative can be compared.</u>

EPA's June 2016 FS continues to be very unclear on EPA's vision for actual implementation of its selected remedy. On the one hand, it suggests in a few places that some elements of the remedy will need to be further defined or adjusted or modified during remedial design. On the other, it states definitively that the "remedy will be implemented as described. That is, there would be no changes identified during remedial design."[53] Further, the schedule outlined by EPA for remedial implementation

[52] *2016 Discount Rates for OMB Circular No. A-94,* M-16-05 (Office of Management and Budget, February 12, 2016)
[53] EPA June 2016 FS page 3-39.

is impossible on its face – as discussed above, "Year 0" for every alternative contains a minimum of 4 years of activities.

Generally speaking, EPA continues to use a prescriptive set of technology evaluation and scoring criteria to determine the technologies to be applied in each area of the site. Given the deficiencies in the FS described above, and given the lack of evaluation of SDU-specific information, Figure 3.8 presents an entirely-too-prescriptive approach to technology assignments. As the LWG previously commented, EPA's approach prevents meaningful comparison of the performance of various technologies in the FS, and because the technology assignment is based on FS-level information, the prescriptive set of evaluation criteria will not appropriately or accurately predict the most appropriate technology assignments or configurations for remedial design based on data available at the time of design, including data collected post-ROD. For example, those assignments are based on overall general assumptions regarding slopes, presumed "wave zones," and required depths of removal to reach protective levels. With respect to riverbank contamination and presumed groundwater contamination, they are based solely on those general broad designations, without consideration of which COCs are present and conditions of exposure. By contrast, the Corps of Engineers capping guidance document provides design level guidance of modeling and assessment methods to determine the concentration of contaminants of concern that can be safely isolated by capping. EPA's process and these figures should build in the flexibility needed to evaluate the likely performance of technologies against RAOs in the context of the complexities of each particular SDU.

EPA should clearly explain the conditions under which changes to major alternative elements (e.g., changes in technologies assignments, methods to address PTW, methods for determining treatment and disposal requirements, requirements for rigid containment) might be considered or allowed.[54] EPA should explain how new data, including the "initial conditions" assessment will affect the RAL boundaries based on surface sediment concentrations. The FS should include language to allow for updates to risk assessments. EPA should incorporate decision frameworks, such as the capping demonstration decision tree that was discussed during development of the June 2016 FS. No defined processes are in place for proposing equally or more effective capping options or other technology refinements based on detailed design-level evaluations and new data. EPA should explain how the remedy would be implemented spatially (e.g., operable units, groups of SMAs) and provide transparent and reasonable disclosure of when the community can expect cleanup to actually begin.

Conclusion

In failing to comply with requirements for evaluating cleanup alternatives in a FS, as described in more detail below, EPA Region 10 has generated a preferred alternative that requires attainment of a PCB cleanup goal that is not achievable, requires unnecessary treatment, and will be far more disruptive than described by EPA. Further, the cleanup will take much longer to implement than predicted by EPA and will likely cost far more than estimated by EPA; therefore, it is not cost-effective as required by the NCP.

This result is inconsistent with one of the fundamental principles of the Superfund program as expressed in the NCP Preamble: "…this process [the remedy selection process] considers the full range of factors pertinent to remedy selection and provides the flexibility necessary to ensure that remedial actions selected are sensible, reliable solutions for identified site problems." 55 FR 8700 (March 1990). EPA's

[54] The Lower Duwamish Proposed Plan had an entire subsection that described some of the issues with design implementation and what factors and remedy components would have to be worked out in more detail in design. Proposed Plan, Lower Duwamish Water Superfund Site, https://www3.epa.gov/region10/pdf/sites/ldw/pp/ldw_pp_022513.pdf, §10.1, page 89.

preferred alternative is the product of illusory goals for cleanup and wishful thinking related to time and costs and is not a sensible, reliable solution.

The Disputing Respondents stand behind the LWG's 2012 draft FS, which incorporated good science, provided the required comparative analysis of alternatives, and relied on realistic estimates of cost and time to perform work. The Disputing Respondents were prepared to fully engage with EPA and resolve EPA's comments and concerns in order to produce a report that provided a credible basis for EPA's selection of a remedy that conformed to CERCLA, the NCP, and EPA guidance. EPA's unwarranted deviation from the RI/FS process agreed to by EPA in 2001 and set forth in the NCP has created a methodology that does not allow sufficient time for review, consideration and revision of the flawed FS, and is an abuse of discretion. A Record of Decision based upon the June 2016 FS will likely lead to an ineffective cleanup that cannot be implemented in a timely manner.

Requested Relief

1. EPA's June 2016 FS should not be used as a basis for a Record of Decision for the Portland Harbor Superfund Site.

2. The alternatives analysis in the LWG's 2012 FS provides an adequate basis for selecting a remedy at the Site.

Sincerely,

LEGACY SITE SERVICES LLC, agent for ARKEMA INC.

By: Doug Loutzenhiser
Its: Executive Vice President
Email: doug.loutzenhiser@total.com

CHEVRON U.S.A. INC.

By: _____
Its: _____
Email: _____

EVRAZ INC. NA

By: _____
Its: _____
Email: _____

GUNDERSON LLC

By: _____
Its: _____
Email: _____

NW NATURAL

By: _____
Its: _____
Email: _____

TOC HOLDINGS CO.

By: _____
Its: _____
Email: _____

EPA's selection of a remedy that conformed to CERCLA, the NCP, and EPA guidance. EPA's unwarranted deviation from the RI/FS process agreed to by EPA in 2001 and set forth in the NCP has created a methodology that does not allow sufficient time for review, consideration and revision of the flawed FS, and is an abuse of discretion. A Record of Decision based upon the June 2016 FS will likely lead to an ineffective cleanup that cannot be implemented in a timely manner.

Requested Relief

1. EPA's June 2016 FS should not be used as a basis for a Record of Decision for the Portland Harbor Superfund Site.

2. The alternatives analysis in the LWG's 2012 FS provides an adequate basis for selecting a remedy at the Site.

Sincerely,

ARKEMA INC.

_____
By: _____
Its: _____
Email: _____

Chevron Environmental Management Company, for itself and as Attorney-in-Fact for CHEVRON U.S.A. INC.

_____
By: Nathan Blomgren
Its: Project Manager
Email: nathan.blomgren@chevron.com

EVRAZ INC. NA

_____
By: _____
Its: _____
Email: _____

GUNDERSON LLC

_____
By: _____
Its: _____
Email: _____

NW NATURAL

_____
By: _____
Its: _____
Email: _____

TOC HOLDINGS CO.

_____
By: _____
Its: _____
Email: _____

UNION PACIFIC RAILROAD COMPANY

_____
By: _____
Its: _____

preferred alternative is the product of illusory goals for cleanup and wishful thinking related to time and costs and is not a sensible, reliable solution.

The Disputing Respondents stand behind the LWG's 2012 draft FS, which incorporated good science, provided the required comparative analysis of alternatives, and relied on realistic estimates of cost and time to perform work. The Disputing Respondents were prepared to fully engage with EPA and resolve EPA's comments and concerns in order to produce a report that provided a credible basis for EPA's selection of a remedy that conformed to CERCLA, the NCP, and EPA guidance. EPA's unwarranted deviation from the RI/FS process agreed to by EPA in 2001 and set forth in the NCP has created a methodology that does not allow sufficient time for review, consideration and revision of the flawed FS, and is an abuse of discretion. A Record of Decision based upon the June 2016 FS will likely lead to an ineffective cleanup that cannot be implemented in a timely manner.

Requested Relief

1. EPA's June 2016 FS should not be used as a basis for a Record of Decision for the Portland Harbor Superfund Site.

2. The alternatives analysis in the LWG's 2012 FS provides an adequate basis for selecting a remedy at the Site.

Sincerely,

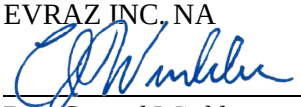
ARKEMA INC.

By: _____
Its: _____
Email: _____

CHEVRON U.S.A. INC.

By: _____
Its: _____
Email: _____

EVRAZ INC. NA



By: Conrad Winkler
Its: President, CEO
Email: mediainquiries@evrazna.com

GUNDERSON LLC

By: _____
Its: _____
Email: _____

NW NATURAL

By: _____
Its: _____
Email: _____

TOC HOLDINGS CO.

By: _____
Its: _____
Email: _____

EPA's selection of a remedy that conformed to CERCLA, the NCP, and EPA guidance. EPA's unwarranted deviation from the RI/FS process agreed to by EPA in 2001 and set forth in the NCP has created a methodology that does not allow sufficient time for review, consideration and revision of the flawed FS, and is an abuse of discretion. A Record of Decision based upon the June 2016 FS will likely lead to an ineffective cleanup that cannot be implemented in a timely manner.

Requested Relief

1. EPA's June 2016 FS should not be used as a basis for a Record of Decision for the Portland Harbor Superfund Site.

2. The alternatives analysis in the LWG's 2012 FS provides an adequate basis for selecting a remedy at the Site.

Sincerely,

ARKEMA INC.

By: _____
Its: _____
Email: _____

CHEVRON U.S.A. INC.

By: _____
Its: _____
Email: _____

EVRAZ INC. NA

By: _____
Its: _____
Email: _____

GUNDERSON LLC

By: Max M. Miller, Jr.
Its: Of Counsel
Email: max.miller@tonkon.com

NW NATURAL

By: _____
Its: _____
Email: _____

TOC HOLDINGS CO.

By: _____
Its: _____
Email: _____

UNION PACIFIC RAILROAD COMPANY

By: _____
Its: _____
Email: _____

preferred alternative is the product of illusory goals for cleanup and wishful thinking related to time and costs and is not a sensible, reliable solution.

The Disputing Respondents stand behind the LWG's 2012 draft FS, which incorporated good science, provided the required comparative analysis of alternatives, and relied on realistic estimates of cost and time to perform work. The Disputing Respondents were prepared to fully engage with EPA and resolve EPA's comments and concerns in order to produce a report that provided a credible basis for EPA's selection of a remedy that conformed to CERCLA, the NCP, and EPA guidance. EPA's unwarranted deviation from the RI/FS process agreed to by EPA in 2001 and set forth in the NCP has created a methodology that does not allow sufficient time for review, consideration and revision of the flawed FS, and is an abuse of discretion. A Record of Decision based upon the June 2016 FS will likely lead to an ineffective cleanup that cannot be implemented in a timely manner.

Requested Relief

1. EPA's June 2016 FS should not be used as a basis for a Record of Decision for the Portland Harbor Superfund Site.

2. The alternatives analysis in the LWG's 2012 FS provides an adequate basis for selecting a remedy at the Site.

Sincerely,

ARKEMA INC.

By: _____
Its: _____
Email: _____

CHEVRON U.S.A. INC.

By: _____
Its: _____
Email: _____

EVRAZ INC. NA

By: _____
Its: _____
Email: _____

GUNDERSON LLC

By: _____
Its: _____
Email: _____

NW NATURAL

By: Bob Wyatt
Its: Director Legacy Environmental Program
Email: rjw@nwnatural.com

TOC HOLDINGS CO.

By: _____
Its: _____
Email: _____

preferred alternative is the product of illusory goals for cleanup and wishful thinking related to time and costs and is not a sensible, reliable solution.

The Disputing Respondents stand behind the LWG's 2012 draft FS, which incorporated good science, provided the required comparative analysis of alternatives, and relied on realistic estimates of cost and time to perform work. The Disputing Respondents were prepared to fully engage with EPA and resolve EPA's comments and concerns in order to produce a report that provided a credible basis for EPA's selection of a remedy that conformed to CERCLA, the NCP, and EPA guidance. EPA's unwarranted deviation from the RI/FS process agreed to by EPA in 2001 and set forth in the NCP has created a methodology that does not allow sufficient time for review, consideration and revision of the flawed FS, and is an abuse of discretion. A Record of Decision based upon the June 2016 FS will likely lead to an ineffective cleanup that cannot be implemented in a timely manner.

Requested Relief

1. EPA's June 2016 FS should not be used as a basis for a Record of Decision for the Portland Harbor Superfund Site.

2. The alternatives analysis in the LWG's 2012 FS provides an adequate basis for selecting a remedy at the Site.

Sincerely,

ARKEMA INC.

_____
By: _____
Its: _____
Email: _____

CHEVRON U.S.A. INC.

_____
By: _____
Its: _____
Email: _____

EVRAZ INC. NA

_____
By: _____
Its: _____
Email: _____

GUNDERSON LLC

_____
By: _____
Its: _____
Email: _____

NW NATURAL

_____
By: _____
Its: _____
Email: _____

TOC HOLDINGS CO.

By: Patricia Dost
Its: Attorney
Email: pdost@pearllegalgroup.com

EPA's selection of a remedy that conformed to CERCLA, the NCP, and EPA guidance. EPA's unwarranted deviation from the RI/FS process agreed to by EPA in 2001 and set forth in the NCP has created a methodology that does not allow sufficient time for review, consideration and revision of the flawed FS, and is an abuse of discretion. A Record of Decision based upon the June 2016 FS will likely lead to an ineffective cleanup that cannot be implemented in a timely manner.

Requested Relief

1. EPA's June 2016 FS should not be used as a basis for a Record of Decision for the Portland Harbor Superfund Site.

2. The alternatives analysis in the LWG's 2012 FS provides an adequate basis for selecting a remedy at the Site.

Sincerely,

ARKEMA INC.

_____
By: _____
Its: _____
Email: _____

CHEVRON U.S.A. INC.

_____
By: _____
Its: _____
Email: _____

EVRAZ INC. NA

_____
By: _____
Its: _____
Email: _____

GUNDERSON LLC

_____
By: _____
Its: _____
Email: _____

NW NATURAL

_____
By: _____
Its: _____
Email: _____

TOC HOLDINGS CO.

_____
By: _____
Its: _____
Email: _____

UNION PACIFIC RAILROAD COMPANY

_____
By: Tod Gold
Its: counsel
Email: tgold@jzplaw.com

UNION PACIFIC RAILROAD COMPANY

_____

By: _____
Its: _____
Email: _____

cc:

Lori Cora, U.S. Environmental Protection Agency, Region 10
Sean Sheldrake, U.S. Environmental Protection Agency, Region 10
Jim Woolford, U.S. Environmental Protection Agency, EPA Headquarters
Mathy Stanislaus, U.S. Environmental Protection Agency, EPA Headquarters
Stan Meiburg, U.S. Environmental Protection Agency, EPA Headquarters
Confederated Tribes and Bands of the Yakama Nation
Confederated Tribes of the Grand Ronde Community of Oregon
Confederated Tribes of Siletz Indians of Oregon
Confederated Tribes of the Umatilla Indian Reservation
Confederated Tribes of the Warm Springs Reservation of Oregon
Nez Perce Tribe
Oregon Department of Fish & Wildlife
United States Fish & Wildlife
Oregon Department of Environmental Quality
LWG Legal
LWG Repository